

U.S. Patent Application Serial No. **09/916,316**
Response dated November 17, 2003
Reply to OA of **July 18, 2003**

REMARKS

Claims 1-12 are pending in this application. An amendment to add new claim 12 has been proposed herein.

Support for new claim 12 may be found on page 19, lines 21-23, of the specification.

Claims 1-3, 5-8 and 10-11 are rejected under 35 U.S.C. §103(a) as being unpatentable over Watanabe et al. (U.S. Patent No. 6,274,646), in view of Ohta et al. (U.S. Patent No. 5,954,866) and EP 892024.

The rejection of claims 1-3, 5-8 and 10-11 is respectfully traversed and reconsideration of the rejection is respectfully requested.

For the Examiner's reference, Applicants attach a copy of EP 0826752 (Watanabe et al.), which is based on the same Japanese priority document as Watanabe et al. (U.S. Patent No. 6,274,646). EP 0826752 has a publication date of March 4, 1998.

The present invention is directed to an ink jet ink composition containing methyl methacrylate/butyl acrylate/acrylic acid copolymer (I) and styrene/maleic anhydride copolymer (II) as a dispersant. The claimed ink composition has excellent long term storage stability and discharge stability as well as an excellent adhesion of ink to recording medium by the combined use of the copolymers (I) and (II) as a dispersant.

Watanabe et al. discloses an ink composition containing a methyl methacrylate/butyl acrylate/acrylic acid copolymer. Watanabe et al. teaches that the fixation (adhesion) of print is

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improved by adding the methyl methacrylate/butyl acrylate/acrylic acid copolymer to an ink composition (column 1, lines 36-39).

The Examiner notes that Watanabe et al. discloses the use of various polymer dispersants, including styrene/maleic acid copolymer (column 3, lines 2-18), but does not disclose the use of a styrene/maleic anhydride copolymer as presently claimed.

Ohta et al. has been cited by the Examiner to show the “equivalence and interchangeability” of styrene/maleic anhydride copolymer dispersant, as presently claimed, with styrene/maleic acid copolymer dispersant as disclosed by Watanabe et al. EP 892024 has been cited by the Examiner as disclosing the use of a styrene-maleic anhydride dispersant having an acid value of not less than 100, preferably 100 to 300, more preferably 100 to 250, used in an ink jet composition.

The Examiner states that in light of the disclosure of Ohta et al. and EP 892024, it would have been obvious to one of ordinary skill in the art to use the styrene/maleic anhydride copolymer dispersant in the ink of Watanabe et al., and thereby arrive at the claimed invention.

However, Applicants first of all respectfully disagree that Ohta et al. discloses “equivalence and interchangeability” of styrene-maleic acid and styrene-maleic anhydride dispersants. The Examiner cites column 5, lines 30-31 and 59-61, in this regard. Lines 59-61 list styrene-maleic acid and styrene-maleic anhydride as two of a long list of “further preferred examples of the polymer dispersant”, this list being in addition to the “preferred examples” in lines 35-44. Nowhere is it stated that these are “equivalent”. They are “interchangeable” only to the extent that both will apparently work in the particular invention of Ohta et al., but this does not clearly indicate

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“interchangeability” in Watanabe et al. At best, Ohta et al. provides a suggestion to use styrene-maleic anhydride instead of styrene-maleic acid.

Applicants also respectfully disagree with the Examiner that EP892924 specifically discloses a styrene/maleic anhydride copolymer consistent with copolymer (II) in pending claim 1. The Examiner refers to page 3, lines 43-46 and 51-55, which state that the ink composition contains a water-soluble resin dispersant having an acid value of preferably 100-300, more preferably 100-250. This is a polymer which may preferably comprise at least one of the 11 monomers listed in lines 53-55, two of which are styrene and maleic anhydride. EP892924 does not even teach that the water-soluble resin dispersant is a copolymer, and the proposed combination of styrene and maleic anhydride would be only one of a large number of permutations of the listed monomers (11 pure polymers, 55 copolymers, etc.).

Moreover, none of the cited references teaches or suggests that the storage stability and discharge stability of ink jet compositions can be improved by using a combination of methyl methacrylate/butyl acrylate/acrylic acid copolymer (I) and styrene/maleic anhydride copolymer (II) as a dispersant. Applicants have made additional comparative tests in this regard, and here enclose a Rule 132 Declaration by Kazuaki Watanabe and Minoru Waki. The Declaration demonstrates that the storage stability and discharge stability of ink jet ink compositions can be noticeably improved by the **combined use of the copolymers (I) and (II)**. These results are completely **unexpected** based on the cited references, which suggest no advantage associated with this claimed combination of copolymers.

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Applicants therefore assert that claims 1-3, 5-8, 10 and 11 are novel and non-obvious over Watanabe et al. (U.S. Patent No. 6,274,646), Ohta et al. (U.S. Patent No. 5,954,866) and EP 892024, taken separately or in combination.

Claim 4 is rejected under 35 U.S.C. §103(a) as being unpatentable over Watanabe et al. (U.S. Patent No. 6,274,646) in view of Ohta et al. (U.S. Patent No. 5,954,866) and EP 892024 as applied to claims 1-3, 5-8 and 10-11 above, and further in view of Zhu (U.S. Patent No. 5,889,083).

Reconsideration of the rejection is respectfully requested.

The Examiner cites Zhu for the disclosure of acetylene glycol. Applicants have argued above that base claim 1 is novel and non-obvious over Watanabe et al., Ohta et al. and EP892024, providing evidence of unexpected results arising from the combination claimed in claim 1. Applicants submit that there is no disclosure in Zhu suggesting that the results presented in the Declaration would be expected.

Claim 9 is rejected under 35 U.S.C. §103(a) as being unpatentable over Watanabe et al. in view of Ohta et al. and EP 892024 as applied to claims 1-3, 5-8 and 10-11 above, and further in view of either Sacripante et al. (U.S. Patent No. 6,329,446) or Cheng et al. (U.S. Patent No. 6,239,193).

Reconsideration of the rejection is respectfully requested.

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The Examiner cites Sacripante et al. and Cheng et al. for disclosures with regard to the average particle size of the pigment. Applicants have argued above that base claim 1 is novel and non-obvious over Watanabe et al., Ohta et al. and EP892024, providing evidence of unexpected results arising from the combination claimed in claim 1. There appears to be no disclosure in Sacripante et al. and Cheng et al. suggesting that the results presented in the Declaration would be expected.

Regarding new claim 12.

Entry and allowance of new claim 12 are respectfully requested. New claim 12 depends from claim 1, and the arguments presented above for claim 1 are applicable to claim 12.

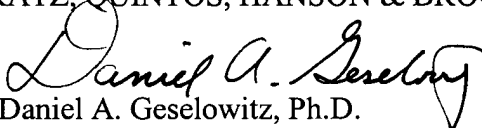
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If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact Applicants undersigned agent at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

In the event that this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

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Enclosures: Declaration under 37 C.F.R. 1.132
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